

CLEEMAN (R.A.)

PELVIC CURVE

IN THE

Shank of the Obstetric Forceps.

BY

RICHARD A. CLEEMAN, M.D.,

VICE-PRESIDENT OF THE PHILADELPHIA OBSTETRICAL SOCIETY.

WITH THREE ILLUSTRATIONS.



Reprinted from the AMERICAN JOURNAL OF OBSTETRICS AND DISEASES OF WOMEN AND CHILDREN, Vol. XI., No. II., April, 1878.

NEW YORK:

WILLIAM WOOD & CO., 27 GREAT JONES STREET.
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With the Compliments of

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Pelvic Curve in the Shank of the Obstetric Forceps.¹

BY

RICHARD A. CLEEMAN, M.D.,

Vice-President of the Philadelphia Obstetrical Society.

(With three Woodcuts.)

THE use of the forceps in midwifery is such an every-day occurrence in this country, that when delay is met with in any case of head presentation where no very decided contraction of the mother's pelvis is recognized, this is the resource which first suggests itself, and is almost invariably accepted. In nearly all such instances the instruments in common use enable the delivery to be accomplished safely and easily, and the faith of the practitioner is justly strengthened in these "iron hands."

But there happens every now and then a case in which the accoucheur, having applied, with the usual confidence, the blades of his long forceps to a highly placed head, locked them, and begun his traction, finds them, on the first use of moderate force, leaving the head, so that he is compelled to desist from his efforts at extraction. The forceps has *slipped*. This event marked the following cases, some features of which are briefly recorded.

CASE I.—A physician, in asking my aid in a difficult labor, requested me to bring embryotomy instruments, since he found himself unable to deliver the child with his forceps. I saw the patient, a multipara, who had endured several instrumental labors, at 1 P.M. The os uteri had been fully dilated since early in the previous night; the head presented, but did not descend, so that at 7 A.M. the accoucheur had applied his forceps (Wallace's); within four and a half hours he had made three unsuccessful attempts at extraction, the instrument slipping each time eventually from the head; he then had been bold enough to give ergot. An hour and a half had elapsed since the drug had been administered when I arrived, and I found her suffering from the almost tetanoid spasms of the uterus characteristic of the action of the medicine, very restless and anxious. The head of the child was now occupying the cavity of the pelvis, with the occiput anteriorly, and lying, to my surprise, not

¹ Read before the Philadelphia Obstetrical Society, Dec. 6th, 1877.

at all "locked." My own forceps (Hodge's) were put on easily, and the child, which was dead, delivered without forcible traction. There were deep indentations in the temporal region of its head on either side, the result of the "nipping" at the superior strait.

CASE II.—A multipara had fallen in labor for the eleventh time. It was stated that this process had on every previous occasion been assisted by the operation of turning or the use of the forceps, notwithstanding that some of the fetuses were not advanced beyond the seventh month; and all the children but the first-born, who was one of the latter and was now living, had been born still. The accoucheur in attendance, in the present instance, had found, when he first reached the bedside of the patient, the dilatation of the os uteri nearly complete, the membranes ruptured, the head of the child presenting. After three hours of waiting, in which the head failed to descend, he attempted its delivery by the forceps, but found it impossible to so apply the blades of the instrument that they would hold to the head; he had then, like the practitioner in Case I., administered ergot. One hour subsequently I met him; my examination showed the head still at the superior strait, with the posterior fontanelle at that part of its margin directly behind the right acetabulum. The patient was complaining of great pain, and continually making "bearing down" efforts. In consequence of her straining against me, I experienced a little difficulty in putting on my forceps (Hodge's), but a few minutes' traction sufficed to deliver a dead female child, though I found after extraction that the blades of the instrument had been adjusted to the head somewhat obliquely. The right parietal bone of the fetus was marked with an indentation which I referred to its forcible impingement against the sacral promontory.

CASE III.—I was called by a medical friend to consult with him in the case of a primipara, in which convulsions had supervened at the close of a tedious first stage of labor. The patient was already under chloroform when I saw her, and lying quietly; after half an hour had elapsed, however, another convolution occurred. We then determined to deliver the child as rapidly as possible, and decided to apply the forceps to the presenting head. But our attempts with that instrument were futile, the blades always slipping away from the head. This was the first case in which I had been baffled in this way, and to save the patient from the danger of any want of adroitness on my part, we now asked the aid of a gentleman in whose skill this Society has the fullest confidence. He kindly responded to our call, but was as unable as ourselves to make the forceps hold, so that we were driven to the operation of embryotomy. Inspection of the cranium showed that the pieces torn from it belonged almost exclusively to the left parietal bone from about its supero-posterior angle, only a small fragment having been taken from the right parietal, and the occipital bone being not at all broken. The exact position of the head is not mentioned in my notes, but I infer from the parts of the skull removed, that the head was trans-

verse with occiput to left ilium and entering the pelvis with its axis oblique to the plane of the superior strait, revolving about the sacral promontory ; also that flexion was incomplete.

CASE IV.—Two of my friends had been trying for three hours to deliver with the forceps a patient in her second confinement. This instrument had been used in her first labor, and the forcible pressure to which the child's head was then subjected was attested by the deep scars which marked it. The position of the presenting head on the present occasion was looked upon as that in which the occiput is directly behind the right acetabulum. With this view, the forceps (Hodge's) were applied with the greatest care, but a firm grasp of the head was not secured. After these efforts, I tried the adjustment of a pair of forceps I had brought with me of the same pattern, several times, but they always slipped, and I was no more successful with the Simpson forceps. A careful examination of the position of the head which I made led me to hold a different opinion as to the relations of the head to the pelvic walls, namely, that the *brow* was behind the right acetabulum. Relying on this idea, I essayed and believe I succeeded in rotating the occiput forwards to the left. Then I once more applied the forceps, which no longer slipped, and a dead child was delivered without much difficulty.

CASE V.—A multipara, as in Case II., was in labor for the eleventh time; in all her previous confinements but one, in which she bore twins, the forceps had been used to effect delivery ; with the assistance of this instrument, however, the labor had always been terminated without difficulty. In this instance I was called by the physician in attendance at midnight, labor having begun at an uncertain time on the previous day. The os was fully dilated, the membranes ruptured, and the head presenting with the occiput to the left acetabulum. The uterus was acting at intervals, but effected no sensible descent of the head ; a certain amount of contraction was seen to exist in the conjugate diameter of the pelvis, and the woman was manifesting symptoms of exhaustion. Under these circumstances it was decided to aid the delivery with the forceps. I experienced great difficulty in so applying the blades of the instrument that they would lock, and when this was accomplished the forceps invariably slipped from the head when firm traction was made. I persevered for some hours, however, trying, with similar result, the Hodge, Davis, and Simpson forceps. Then another accoucheur who had come to our assistance made like attempts, but met with the same failure. We felt then obliged to diminish the head, and by this means finally delivered the fetus, a large female ; the portions of the cranium removed belonged about the posterior fontanelle.

In all the above cases the failure to obtain a firm grasp upon the child's head with the forceps coincided with its high situation and some contraction of the pelvic diameter in the mother. In Cases I. and II., my success, after others had failed, was due to

the later period at which I made my attempts, by which time the prolonged contractions of the uterus, increased in force by the ergot, had caused the head to descend lower in the pelvis. This explanation applies with especial force to Case I., in which the head had reached a locality whence any kind of obstetric forceps, even one of the most primitive description, would have served to extract it. In Case III., the final satisfactory adjustment of the instrument on the child's head depended, perhaps, on the greater length of the oblique diameter of the pelvis, into which the long diameter of the head fell when its position was changed, which permitted its engagement in a lower plane.

Now, why are the forceps prone to slip when placed on a head exceptionally high in the pelvis?



FIG. 1.

Obstetric forceps modified as suggested in the text. The dimensions are those of the "Hodge forceps," except that the shank has been bent at an angle of 120° , and there are no hooks at the end of the handles.

I believe because of the difficulty, and in some cases even the impossibility, from the peculiar form of the pelvic canal, of depressing the handles of the instrument sufficiently, when adjusting it, to allow a certain length of the blades to pass beyond a true equator of the head—as happens, for instance, when the parietal protuberances occupy the fenestrae—and such difficulty is enhanced by the condition of imperfect flexion of the head, which is likely to obtain when it lies high in the pelvis.

I have illustrated these points in the accompanying diagrams, in which the dimensions of the child's head at term, of the cavity of the mother's pelvis, and of the forceps are represented; the authorities whose measurements have been taken, with their values, being recorded on the margin. In figure 2, the head in complete flexion is represented at the

point where it would be arrested, supposing the conjugate diameter of the pelvis to be but three inches in length. It is pictured

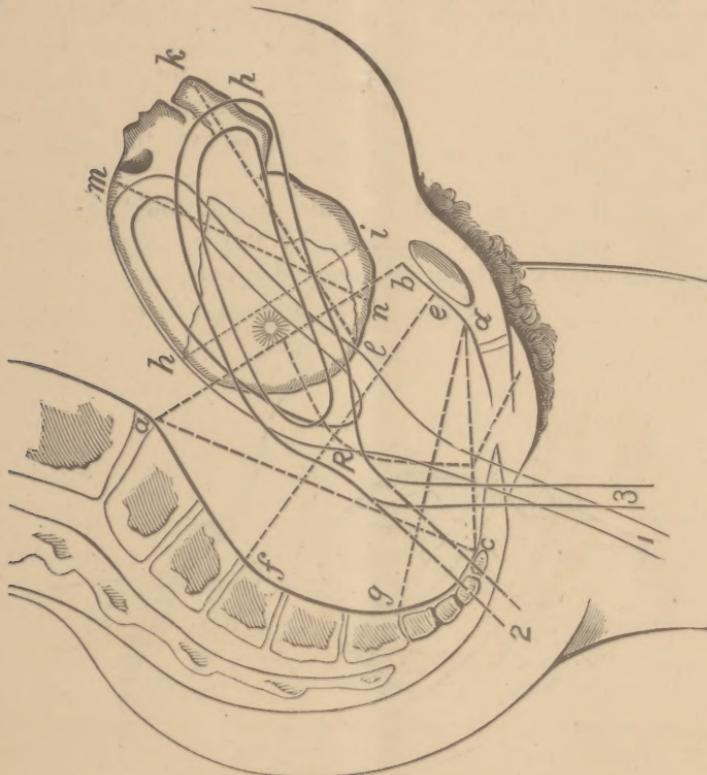


FIG. 2.

1. Hodge forceps as usually applied high up with liability to slip.
 2. Hodge forceps with blades correctly applied; the shank would pass through the coccyx.
 3. Hodge forceps with a pelvic curve in the shank ; the latter will not interfere with the perineum.

Measurements of Pelvis.—*a*, *b*, Antero-posterior diameter (conjugate) of superior strait (Schroeder). *c*, *d*, Antero-posterior diameter (conjugate) of inferior strait, $3\frac{5}{6}$ inches (Schroeder). *e*, *f*, Distance from middle of symphysis to upper margin, 3d sacral vertebra, 5 inches (Schroeder). *g*, *d*, Distance from inferior angle of sacrum to apex of pubic arch, $4\frac{1}{2}$ inches, (Schroeder). *b*, *d*, Depth of cavity behind symphysis pubis, $1\frac{1}{2}$ inches (Ramsbotham). *a*, *c*, Depth from sacral promontory to top of coccyx, $5\frac{1}{2}$ inches (Ramsbotham). Inclination of pelvis in recumbent as in upright position (Schroeder), 54.5° . *a*, *b*, *d*, Angle of symphysis pubis, with conjugate diameter 100° (Schroeder).

Measurements of Forceps (Hodge).—*o, p*, From joint to extremity of blade, 9.5 inches. *o, r*, Length of parietal shank, 3.5 inches. *p, r*, Length of blade. 6 inches. Breadth of blade, 1.8–1.7 inches. Breadth of fenestra, 1.1 inch. Perpendicular elevation of point *n*, when instrument on horizontal surface. 3.4 inches.

Dimensions of Fetal Head (Meigs).—*h, i*, Occipito-bregmatic diameter, $3\frac{1}{2}$ inches. *k, l*, Occipito-mental diameter, $5\frac{1}{2}$ inches. *m, n*, Occipito-frontal diameter, $4\frac{1}{2}$ inches.

in the seldom or never occurring directly antero-posterior position, because this can be better expressed in a "flat" drawing. The forceps is shown applied to the head in two ways, the faulty one, in which it is likely to be placed, and the desirable one. In the former, the blades of the instrument are seen to grasp the flat and sloping sides of the sinciput, off which they will glide when strong traction is made, as over the converging sides of a wedge.

In the latter, a firm hold upon the occiput would be obtained, but such an application is resisted by the interference of the projecting coccyx with the necessary depression of the handles of the instrument. Figure 3 is designed to show how even

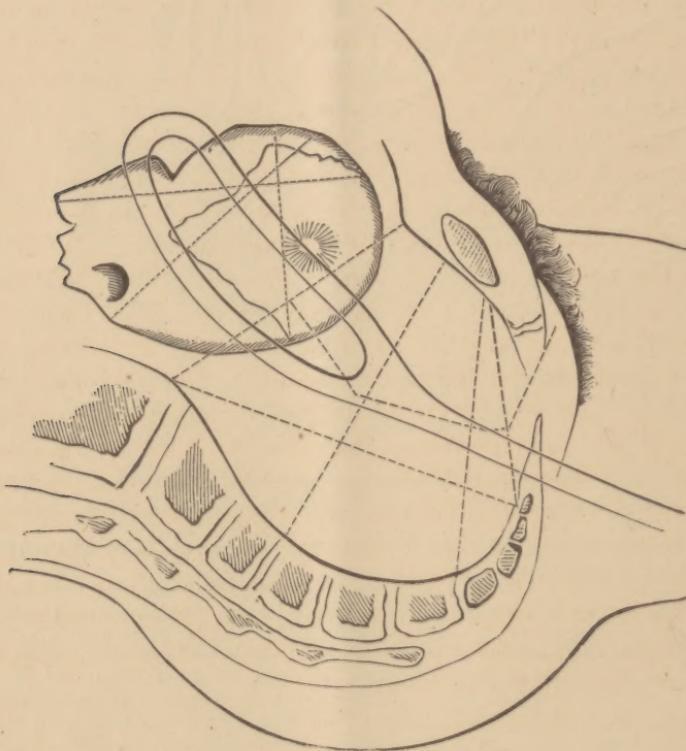


FIG. 3.

more of the volume of the head is beyond reach for the adjustment of the forceps when flexion is incomplete.

It may, however, be objected to the above demonstration that, when the head lies in an oblique or in the transverse diam-

eter of the pelvis, and the forceps are applied with reference to the sides of the child's head, the shank of the instrument will not impinge against the coccyx, but will correspond with a shallower part of the wall of the bony cavity. The criticism is just, but in practice the undilated and not readily dilatable condition in which the neighboring soft parts are often found proves as formidable an impediment to what is desired as the more rigid coccyx.

Now, believing that I do not greatly exaggerate the difficulties in question, of obtaining a secure hold with the forceps upon the highly situated head, I venture to advocate a modification in the fashion of the instrument to better adapt it for use in such unfortunate cases as I have mentioned; namely, the extension of the "pelvic curve," accepted for the blades, to the shank of the forceps. A glance at the diagrams will suggest how easily such a change would keep the shank out of the way of the obstructive resistance of the pelvic walls.

In using an instrument thus modified, the extracting force must of course be applied perpendicularly to the handles, as nearly as possible in the axis of the superior strait. After the head has entered sufficiently deeply into the pelvis, the forceps with the curved shank could be removed and an instrument of the ordinary kind substituted, that advantage might be taken of the greater mechanical power afforded by the straight shank of the latter. Among the great variety of forceps which have been devised, one instrument is to be found with the curve in the shank as recommended. It has perhaps been lost sight of because of its general inferiority to those now in constant use. But I have imagined that I would not be trespassing too much upon your time in attempting to establish for it a superior claim in a special case, since, if I succeeded, I should have restored to our obstetric armamentarium an additional means to supplant the dreadful alternative of embryotomy.

